

of Kunth and Lindley, admits here the quaternary type which in the primitive plan of the flower would be general in all the floral whorls. He supports this opinion by new examples, added to those already known, of siliques with four valves, and also by teratological facts, namely, the transformation, in certain proliferous flowers of this family, of the four carpellary leaves into four sepals having rudiments of ovules. He thus proves, in this case, another abortion, taking place in the antero-posterior direction.

From the facts established in his memoir he deduces the following conclusions :—

1. The quaternary type, with two series of stamina on the andrœcium, constitutes the primitive symmetry of the Cruciferae.

2. The absence of bracts, the greater or less flattening of the peduncles, the more or less depressed form of the flower-bud, the slight irregularity of the calyx, the absence of two stamina in the outer whorl of the andrœcium, and often of the two glands upon which they should have been inserted, and, lastly, the abortion of two carpellary leaves are induced by a pressure exerted from within outwards upon the flowers and bracts of the Cruciferae.

3. This pressure is due to the accumulation of the flowers, which are developed in great numbers at the apex of the inflorescence (which is then corymbiform) and mutually hinder each other in their evolution, but also to the resistance presented to this expansion by the closely approximated leaves surrounding the inflorescence at its origin.—*Comptes Rendus*, December 19, 1864, p. 1041.

*On Ancient Human Races of Belgium, contemporaneous with the Reindeer and the Beaver.* By Professor Van BENEDEEN.

Close to the Cavern of Nutons, which is situated in the valley of the Lesse, in an excavation which can hardly be called a cave, we have found human bones in abundance; and we have stopped digging until the 26th December, in order to give an opportunity to those who may be interested in the matter, of seeing with their own eyes (I will not say fossil men, as the word is too elastic, but) skeletons which have been entombed there by the waters before or during a great cataclysm. This grotto is situated 40 metres above the present level of the Lesse. The skeletons are found in the following conditions :—All the bones are scattered, the long bones always placed longitudinally, and a perfect human cranium beneath a large stone which still adheres to the wall by stalagmites. This cranium is half filled with stones, which are scarcely smaller than the occipital foramen through which they have passed. In front of the cranium there was a scapula, some clavicles, ribs, long bones, and vertebræ of children, young people, and adults. A cervical vertebra was pressed over the coracoid apophysis of the scapula with such force that the ring has been broken, and it cannot be detached without violence. Bones were found *wedged in* between stones in such a manner that there was absolutely no space between them and the sides of the stones. Water alone could have produced such an effect. In the

midst of some large stones there was another complete cranium, but of this the parietal bone is fractured. We commenced with the frontal bone of a child. We have also half a dozen lower jaws, and nearly all the bones, even to the sternum, the sacrum, the bones of the tarsus and carpus, the phalanges and separate teeth. The bones are completely destroyed or fall to powder where the water penetrates during winter—that is to say, where it soaks through the walls. The other bones, which are in a dry state, are in a perfect state of preservation.

These human bones occur side by side with bones of a Bear (not *Ursus spelæus*, but more nearly allied to the existing species), of the Ox, Horse, Reindeer, Beaver, Glutton, Goat (it might be taken for our domestic Goat), and several Carnivora, a mass of Birds, Fishes, (Trout and Pike), Snails (*Helix pomatia*, *H. lapicida*, *H. arbustorum*, and *H. cellaria*), and the *Unio batava*, which, like the *Helices*, still exists in the neighbourhood. With these bones there occur flint implements of the most primitive form, fragments of charcoal, calcined bones, and fragments of a very coarse pottery. We have also found some worked antlers of the Reindeer, but no appearance of designs.

There has been no disturbance of the soil, and there is no external communication except in front; the earth and stones which fill the grotto are placed in a plane slightly inclined towards the bottom, and it is evident to all those who see these objects in their place that the human bones were deposited at the same time with those of the animals.

After some observations on the progress of the excavations, and the means adopted for preventing this interesting deposit from being tampered with, Professor Van Beneden proceeds as follows:—"I send you sketches of the two crania above mentioned, to serve until I can send a photograph of them, and afterwards casts. You will see that No. 2 is as brachycephalic and prognathous as it can be; No. 1 is orthognathous, and the cranium is more elongated behind. The outlines present no less difference. The prognathous skull No. 2 is truncated in front; the other is regularly arched, and exhibits the parietal swellings more towards the front. I may remark also that the cranium No. 1 is by far the best-preserved, its bones being as hard as if it had been buried but a little while, whilst the bony substance of No. 2 is very friable. They were nevertheless side by side. It is the well-preserved cranium (No. 1) that was half filled with unrolled pebbles and fragments of charcoal, with a metacarpal bone and some fragments of bones. What interpretation is to be given of these facts? Has No. 1 succeeded No. 2, or did they live together? You will remark that the prognathous skull has a finer cranial capacity than the other."

In communicating to the Academy of Sciences the above extracts from Professor Van Beneden's letters to him, M. de Quatrefages remarks that the prognathism of No. 2 seems exactly to correspond with a fact of the same nature, exhibited by an upper jaw from a cave of the Aveyron, presented to the Anthropological Society by

M. Pruner-Bey. The latter and M. Gratiolet showed that the prognathism of this isolated jaw did not indicate any real resemblance to the Quadrumanous type. The cranium discovered by M. Van Beneden fully confirms this view; for in this the cerebral development is perfectly Human, and the frontal region in particular presents a remarkable extent. On the other hand, the well-marked brachycephalism of this cranium forbids all approximation to the negro type.—*Comptes Rendus*, December 26, 1864, p. 1087.

*Note on the Metamorphoses of Marine Crustacea.*

By M. Z. GERBE.

After referring to the researches of M. Coste and himself, which led them to the conclusion that the larvæ of the *Palinuri* are identical with the Crustacea described by naturalists as forming the genus *Phyllosoma*, the author states that, as several zoologists are still doubtful of the truth of these results, he gives a description of the observed facts, in proof of the opinion above mentioned.

The larva of the *Palinurus* of our seas manifests those general characters which have been described in the exotic species of *Phyllosoma*—as, for example, the absence of branchiæ, and the flattened, membranous, diaphanous body, divided into two bucklers, one of which, of larger size and rounded form, constitutes the head, and supports in front four antennæ and two pedunculated eyes, whilst the other, smaller one, terminated posteriorly by a short and slender abdomen, bears the footjaws and true feet, furnished with ciliated appendages.

This larva does not, indeed, correspond completely with the characters of the genus *Phyllosoma*: thus it presents no trace of the false feet which are attached to the abdominal segments of *Phyllosoma*; the last of these segments is simple, instead of being terminated by a fin composed of five laminæ; and, lastly, it only exhibits two pairs of footjaws and three pairs of true feet.

Hence it would at first appear that the embryo of *Palinurus vulgaris* is not a *Phyllosoma*, as it does not present all the characters of that genus. But these are in reality only transitory differences, which will be successively effaced in the course of the first four or five changes of skin. Even at this period, some of the organs which these moults are to bring to light are represented by excessively rudimentary buds, with corresponding nervous ganglia and divisions of the sternal artery; the first two footjaws and the last two pairs of true feet are in this condition.

On witnessing the hatching of the marine Crustacea, and following their development, we find that *all make their appearance in a larval form, and that, immediately after their birth, all of them undergo a first moult*. They detach themselves from the epidermal envelope in which their ovarian development has been effected; and when they are entirely freed from it, organs which were previously invaginated, like the pedunculated eyes of the Snails, become everted. Of this sort are the spines which arm the cephalothorax of most of them (especially the larvæ of the *Zoëa*-form), the last joint of the footjaws